EPA Comment #	Report Section / Page	EPA Comment	Sub-Model	Type	Level of Effort
1	Section 1.3, p. 3	This section states the main goal of the work discussed in this report is to simulate physical and chemical processes that are controlling chemical fate and transport of key Site-related contaminants within the aquatic environment of the Site. It could not be determined whether major rain events such as the June 2001 Tropical Storm Allison nor the 2008 Hurricane Ike were included as factors. The October 1994 rain storm that resulted in the Pipeline explosion was documented as a notable storm event. Data regarding such events shall be added and discussed in the report to determine the river depth and possible impacts.	General		Minor
2	Section 1.3, p. 3, footnote	"Although there are data gaps pertaining to the fate and transport from subsurface soils associated with the impoundment south of I-10 to the aquatic environment, those data gaps do not affect or limit this analysis". The report shall provide data or evidence to clarify and justify this statement.	General		Minor
3	Section 2.2.1, p. 8	The report shall provide a reference for the following: "The hydrodynamic model that was applied in this study is the Environmental Fluid Dynamics Code (EFDC), which is supported by USEPA."	Hydro		Minor
4	Section 2.2.2, p. 9	The report shall justify not simulating organic solids in the model framework. In addition, clarification of footnote 3 is needed because marine traffic (other than the San Jacinto River Fleet) including dredges and barges have had operations in this area prior to 2011.	Sediment Transport	Assumptions and Approximations	Moderate
5	Section 2.3, p. 11	"This approach is valid and has been used at numerous other sites (e.g., Upper Hudson River, Lower Willamette River)." The report shall provide citations so the reader can confirm that the approach used in these other studies is applicable to this study.	Hydro	Assumptions and Approximations	Minor
6	Section 2.3, p. 11	The report states "a valid approximation for the non-stratified flow conditions that exist in the San Jacinto River". The report shall explain and provide data to justify this in further detail. One would assume that in some cases depending on San Jacinto River flow and the tidal effect that there would be some stratification in areas at the fresh water and salt water interchange.	Hydro	Assumptions and Approximations	Moderate
7	Section 2.3, p. 11	It appears that consideration was given to the nearby outfalls that may impact the flow of the river. However, it is not apparent that influence of current movement from barge traffic was considered, nor the impact of waves. The movement of constant barge traffic near the waste pits may impact sediment movement. While conducting San Jacinto River surface water sampling, Harris County has observed increased silting as a direct result of barge movement. Some areas are so highly silted that boats are no longer able to launch in areas previously used for such activity. The effects of barge traffic (using a prop scour or other appropriate model) and waves in the area of the waste pits shall be evaluated and described in the report.	Sediment Transport	Assumptions and Approximations	Moderate - Major

8	Section 3 and Appendix A	The bathymetry and floodplain topography of the model domain were used to define the thickness (water depth) of each model cell. Various datasets were used to assign cell values. Where data were not available for individual cells, values were assigned by interpolation of existing cell data. Details of the interpolation method(s) are not provided in the report. The report shall include this information.	Hydro	Bathymetry and Geometry	Moderate
9	Section 3.1, p. 14	In footnote 7 it states that "sediment transport and contaminant fate model predictions are not relevant to this portion of the HSC". This statement shall be deleted from the footnote and shall be technically justified and supported with data within the text of the report. The explanation given in the report in support of this major assumption is not satisfactory.	Sediment Transport	Assumptions and Approximations	Moderate
10	Section 3.2, p. 14	#10: (Section 3.2, p. 14): The report shall provide the vertical accuracy of the model grid. The USGS 10m DEM data have a vertical resolution of 1-3 meters. The report shall provide confirmation that the model did not use these data in important areas in the model. An assessment of the vertical accuracy for the most critical areas within the model shall be provided. This has the potential to be a significant source of uncertainty, so more discussion and approach disclosure will be beneficial. In low, flat areas and depositional zones, are the elevation data good enough that the model inundates the area within acceptable tolerances? Does the model inundate critical areas 10% less than actual, 50% more, etc.? Was this assessed? If not, consider using satellite imagery and picking images with inundation during the model run period and determining if there is inundation in the model. By checking different inundation images and comparing to the model inundation extent, an assessment of the ability of the model to estimate floodplain inundation and deposition can be made.	Hydro	Bathymetry and Geometry	Major
11	Section 3.3.1, p. 15	Inflow rates at the Lake Houston Dam include tainter gate discharge. However, the tainter gate position is adjustable and the methodology used to account for its rating curve with respect to its height variability is not provided. The report shall provide this information.	Hydro	Inflow Boundary Conditions	Minor
12	Table 3-1, p. 16	The reviewer obtained a report from CWA that contained the rating table for the spillway. The rating table includes discharges for overflow for the spillway, tainter gate, and flash board for a given stage. It appears that the flash board discharge has not been included in the cumulative discharge, and that there is a two foot difference in the rating tables. In Table 3-1, zero flow over the spill way is at 44.5, but in the CWA table zero flow is listed at 42.5. In addition, the CWA rating table includes tainter gate and flash board discharges down to 38 feet. The reviewer realizes that a different datum was used for lake level and that the rating curve was redone in 2007. For example, lake stage level in Table 3-1 at 46 is listed at 18,400 cubic feet per second (CFS) spill way and 9,900 CFS tainter for a total of 28,300 CFS, whereas the CWA rating at 44 shows 18,366 CFS spillway, 9,875 CFS tainter, and 1,959 CFS flash board for a total of 30,300 CFS. Apparently the model assumes that the flow out of the lake is based on the rating, but that also assumes the gates are open for each level. This is likely not the case at least at lower flows or we would have a flow of 8,600 CFS at water level 42.5 (CWA rating) from the tainter gate and flashboard alone. The main	Hydro	Inflow Boundary Conditions	Moderate - Major

13	Section 3.3.1, p. 17	The report shall provide an assessment of how well the approach works for 1985-1996. To do this, use the same technique for the six stations for 1996-2010 and compare it to the discharge computed using the rating curve. Then include an assessment of the difference between these two approaches on a daily, monthly and annual scale for 1996-2010. A table of statistics will suffice for the assessment.	Hydro	Inflow Boundary Conditions	Moderate
14	Section 3.3.1, p. 18	The report shall provide the return period for the 356,000 CFS flow rate, and shall describe exactly where did this peak flow rate occur?	Hydro	Inflow Boundary Conditions	Minor
15	Section 3.3.1, p. 18	The report discusses the flow rate of the San Jacinto River on October 19, 1994 (during the river fire and explosion event), as it related to the 100 year flood plain. This flow rate shall also be compared to the flow rate seen as a result of Tropical Storm Allison (2001) and Hurricane Ike (2008) since these two events devastated the vast majority of Harris County water ways.	Hydro	Inflow Boundary Conditions	Minor
16	Section 3.3.2, p. 18 and 19	For the bayous along the Houston Ship Channel; a. The report shall provide each watershed drainage area as was done for the watersheds above Lake Houston in Section 3.3.1. This shall include the percentages for each watershed as well. Describe in detail how the surrogate locations were used. Figure 3-9 shows the plots, but is not very clear how this was used without further information. b. For filling in data gaps for the tributaries, the approach is not adequately defined. It cannot be determined if data gaps were filled directly from data from another station, or if a linear relation was defined between the stations and the gap was filled by defining the relation [y=mx+b] between the two stations. If the former was used, that is a problem. If the latter was used, that is adequate. A good approach would be to use MOVE1 record extension (freeware from USGS, part of the Streamflow Record Extension Facilitator version 1.0, see http://pubs.usgs.gov/of/2008/1362) to extend the record based on nearby stations. The approach for filling in the data gaps shall be described in the report.	Hydro	Inflow Boundary Conditions	Moderate
17	Section 3.3.3, p. 20	The water surface elevation (WSE) data at Morgan's Point were added to the model at the location of the Battleship Texas State Park location where they were used as a boundary condition at Battleship Texas State Park. The hydraulic regime at the confluence of the Houston Ship Channel at the San Jacinto River (Battleship Texas gauge station) is fundamentally different than that which occurs at the mouth of the San Jacinto River at Galveston Bay (Morgan's Point gauge station). While approximately symmetrical tidal currents can be expected at both the Battleship Texas and Morgan's Point gauge stations during non-event periods, the symmetry should not exist during periods of flooding. A decoupling of water surface elevations between stations is expected during flood events due to a local heightening of water surface elevation from increased freshwater flow at the mouth of the Houston Ship Channel compared to that of the more tidal-influenced, more open marine environ of Galveston Bay (e.g., Thomann, 1987). Consequently, the water surface elevation response at the downgradient model domain boundary (Battleship Texas) would be significantly different than the water surface elevation response downstream at Galveston Bay (Morgan's Point) during a flood or surge event. As such, the use of data from Morgan's Point may	Hydro	Downstream Boundary Conditions	Moderate - Major

18	Section 3.3.3, p. 20	Verified WSE data from Morgan's Point are available from 1996 to present. Thus, it seems that predicted WSE were used in the model from 1990-1996 and that data from 1996 to 2011 were used for the downstream boundary conditions. The report shall clarify this matter.	Hydro	Downstream Boundary Conditions	Minor
19	Section 3.3.3, p. 20	The report shall provide the location of the downstream boundary condition explicitly stated, and provide information about which data represents the boundary condition.	Hydro	Downstream Boundary Conditions	Minor
20	Section 3.3.3, p. 20	This section selects 16 ppt as the salinity inputs from the bay boundary of this model. The report shall describe how this value was selected. Recent work (for example	Hydro	Downstream Boundary Conditions	Moderate
21	Section 3.4, p. 20; and Figure 3-13	Figure 3-13 shows three acoustic doppler current profiler (ADCP) locations, but only two are described in the text. The report shall describe the ACDP in 2010 and the reason for relocation in this section.	Hydro	Calibration and Validation	Minor
22	Section 3.4, p. 20; and Appendix B	ADCP data during May 10 – July 13, 2011 were used in calibration, but data during July 14 through November 15 (Appendix B) were not compared to the model results. The report shall include a comparison of the model results to the July through November data.	Hydro	Calibration and Validation	Moderate
23	Section 3.4, p. 21	The comparison of the east-west component of the depth-averaged velocity shown in Figure 3-14 shows significant differences between predictions and measurements. The north-south component shows significant differences during the peak flows on July 2–4, 2010. Statistical parameters (e.g., RMS error, Relative RMS error) shall be included that quantifies the agreement between the measured and predicted stages and flows. Based only on the comparison of the plotted times series shown in this figure, we do not completely agree with the last sentence in this paragraph that states "the calibration results demonstrate that the model is able to simulate the hydrodynamics within the Study Area with sufficient accuracy to meet the objectives of this study." At a minimum, the report shall include a sensitivity analysis to assess these observed differences between the measured and simulated depth-averaged velocities and provide a discussion of the results.	Hydro	Calibration and Validation	Moderate
24	Section 3.4, p. 21	From the plots, it appears that the model may tend to mute high and low flows, so this may be an issue during high flow events when much of the sediment transport occurs. The report shall provide simulated and measured flow duration curves comparisons for model calibration. The comparisons would help with the high and low flow calibration. The first step would be plotting the flow duration curves and deciding if the calibration is good enough.	Hydro	Calibration and Validation	Moderate

25	Section 4.1, p. 22 and 23	The report states “Changes in bed elevation predicted by the sediment transport model are not incorporated into the hydrodynamic model…successful calibration and validation of the model indicates that this limitation in the modeling framework does not have a significant effect on the predictive capabilities…” The reviewer understands that over a short period of time, this makes sense. However, the model runs for 21 years and sediment is not being moved to new locations over time. Conceptually this does not make sense. If the model is going to be run for 21 years, the reviewer is having trouble understanding how the fate of the sediments can be adequately tracked when the sediment is not being accumulated in the model over time. The model shall provide for the accumulation of sediment and then subsequently adjust velocities based on the altered bathymetry, or shall provide information/statistics supporting the statement that changes in bed elevation does not have a significant effect on the predictive capabilities of the model. Then, the report states, on page 23, “… numerous other sites have confirmed that this limitation does not significantly affect the utility of this model.” Alternatively, the report shall cite three to five publically available references supporting this approach of not incorporating bed elevation changes	Sediment Transport	Assumptions and Approximations	Major
26	Section 4.2.2, p. 25	The reference Ziegler and Nisbet (1994) was cited as the source of the criteria for determining if sediment from a given grab sample could be classified as being cohesive – D50 < 250 µm and clay/silt content > 15%. These criteria are believed to be too general in that a sediment’s degree of cohesiveness would depend more on the cation exchange capacity of the dominant clay minerals in the sample as well as the ratio of clay to silt size sediment in the sample. As such, either a more site-specific determination shall be made or a more traditional definition of D50 being < 63 µm shall be used.	Sediment Transport	Bed Property Inputs	Minor
27	Section 4.2.2, p. 26	A justification for assuming the sediment bed was hard bottom in the San Jacinto River channel downstream of Lake Houston Dam and in the HSC shall be added to the report. How far downstream in the river channel was a hard bottom assumed? In addition, the report shall comment on potential impacts of these assumptions on sediment and contaminant transport processes in proximity to the Superfund site.	Sediment Transport	Bed Property Inputs	Minor - Moderate
28	Section 4.2.2, p. 26	The report states “Bed-probing was available from 68 locations.” Figure 4-1 appears to have 68 sample locations, but text on page 24, 2nd paragraph, states a total of 139 grain size distribution (GSD) samples were collected in 2010 with another 30 in 2011. The report shall clarify if the 68 locations are a subset of the 169 GSD samples.	Sediment Transport	Bed Property Inputs	Minor
29	Section 4.2.2, p. 26	The report shall show where the 16 dry density samples for cohesive bed areas were collected, as well as the 14 dry density samples for non-cohesive bed areas.	Sediment Transport	Bed Property Inputs	Minor
30	Section 4.2.2, p. 27	The report states that the maximum bed shear stress in the study area was 87 Pa. This must be a typo; the report shall correct this value of the maximum shear stress. The next paragraph states that the average of 53 GSD samples obtained from non-cohesive areas was used for the D50 value for non-cohesive bed grid cells. The report shall show where the 53 samples were collected.	Sediment Transport	Bed Property Inputs	Minor - Moderate
31	Section 4.2.2, p. 28	The report shall state the range of D90 values found in the GSD data and justify the use of the 1,000 µm value; is 1,000 µm the median value?	Sediment Transport	Bed Property Inputs	Minor

32	Section 4.2.2, p. 28	Bed erosion parameters were assumed to be horizontally constant as the Sedflume data did not indicate any discernible spatial pattern. The effect of this assumption was addressed by a sensitivity analysis. However, the analysis varied the erosion parameters uniformly throughout the model; it did not change the erosion parameters within the area of interest for potential remediation. A sensitivity analysis that varies key parameters horizontally within the EPA preliminary perimeter shall be conducted and included in the report.	Sediment Transport	Sedflume Data Analysis	Minor - Moderate
33	Section 4.2.2, Table 4-2	The critical shear stress of 0.62 Pa for the top layer indicates that this 5 cm layer must be fairly consolidated. The report shall provide the average bulk density of the top layers in the 15 cores.	Sediment Transport	Sedflume Data Analysis	Moderate
34	Section 4.2.3, p. 29	A reference to “Figure 4-13” shall be added to the end of second sentence.	Sediment Transport	Misc. Text Updates	Minor
35	Section 4.2.3, p. 30	The report shall be corrected to identify Equation 4-5 is a log-log relationship.	Sediment Transport	Misc. Text Updates	Minor
36	Section 4.2.3, p. 31	The report states “The assumed trapping efficiency was based on professional judgment.” The report shall explain the reasoning associated with the professional judgment that was used to estimate the trapping efficiency of Lake Houston, including data or references for this statement. This is likely an important assumption and there should be several cited references justifying the rate. In the last sentence of the first paragraph it states “which was adjusted during model calibration”. The report shall clarify whether the composition of the incoming load was adjusted, or was the assumed trapping efficiency adjusted during calibration? In addition, the report shall explain why TSS data (which typically would include inorganic and organic solids) used to develop Eq. 4-5 and not concentrations of suspended inorganic sediments, especially considering that production and transport of organic matter was not simulated.	Sediment Transport	Incoming Sed Load at Upstream Boundary	Moderate - Major
37	Section 4.2.3, p. 31	The report shall clarify what sediment size class was set to 25 mg/L at the downstream tidal boundary and tributaries to the HSC. Because these were TSS data and not just concentrations of inorganic sediment, the report shall describe how the 25 mg/L was divided into organic and inorganic size classes in the model?	Sediment Transport	Sed Load at Downstream Boundary	Minor
38	Section 4.2.3, p. 31	The report shall provide a reference or web based location to find the total suspended sediment (TSS) data collected as part of the Galveston Bay National Estuary Program. The reviewer searched for this data and could not locate it.	Sediment Transport	Sed Load at Downstream Boundary	Minor
39	Section 4.3, p. 31	The last sentence in the first paragraph states that model performance was also evaluated by comparing measured and predicted TSS concentrations at the two TCEQ stations shown in Fig. 4-18. This comparison shall be shown and discussed in the report.	Sediment Transport	Calibration and Validation	Moderate
40	Section 4.3, p. 32	The report indicates that the sediment transport model was, in part, calibrated using the settling speed of Class 1 sediment. The Class 1 settling speed used in the calibration is reported to be 1.3 m/d. However, the equation used for Class 1 (cohesive) settling is not evident in the information provided in the main text and Appendix G of subject report, or from James et al. (2005). The report does not include information regarding the specific model used in the determination of the Class 1 settling speed and/or the equivalent effective median grain size of the Class 1 fraction. The report shall include this information.	Sediment Transport	Calibration and Validation	Minor

41	Section 4.3, p. 33		Sediment Transport	Calibration and Validation	Moderate
42	Section 4.3, p. 34	The cumulative frequency plots of TSS shown in Figures 4-24 and 4-25 do not show the timing of the sampling and may fail to show a systematic error. Time series plots for the two sampling stations shall be included to compare the model and TSS data.	Sediment Transport	Calibration and Validation	Moderate
43	Section 4.4, p. 35	The report shall describe how the rates of gross erosion, gross deposition, etc. that are graphed in Figure 4-26 were calculated. Also, the report shall explain how the increase in net deposition of 110% to 150% was calculated.	Sediment Transport	Calibration and Validation	Minor
44	Section 4.4, p. 35	Figures 4-26 and 4-27 show sediment transport sensitivity results for the entire Study area. Because remedial measures will focus on specific areas within the Superfund site, sensitivity analysis results for the portion of the Study area within the site shall also be reported.	Sediment Transport	Calibration and Validation	Moderate
45	Section 4.5, p. 36	The first sentence ends with the statement that "the model reproduces the overall distribution of NSR." Considering what the objective of this modeling study is and how the models are going to be used during the Feasibility Study, a quantitative measure of the model's agreement with "the overall distribution of NSR" shall be included in this report. In addition, a figure that shows the effect of spatial scale on model uncertainty, similar to what AnchorQEA has produced at other sites where they performed sediment transport modeling, e.g., the Lower Duwamish Waterway, WA, shall be generated for this sediment transport model.	Sediment Transport	Calibration and Validation	Minor
46	Section 4.5, p. 36	A consequence of designating the boundary condition for in-coming sediment load to be a proportion of sediment load entering Lake Houston is that the in-coming sediment load must equal 0.0 mg/L during periods when there is no discharge at the Lake Houston Dam. This shall be confirmed, and a discussion of the potential consequence to model calibration shall be included.	Sediment Transport	Incoming Sed Load at Upstream Boundary	Minor
47	Section 4.5, p. 36	The report states "This level of uncertainty in the incoming sediment load is typical…it is doubtful that significant improvements in the accuracy of current sediment loads used as model input could be achieved." When the reviewer looks at Figures 4-24 and 4-25 ("Comparison of Predicted and Measured TSS Concentrations") it appears the model may not be a meaningful management tool. The calibrations of the sediment model at the two calibration points seem poor, but perhaps just additional discussion in the text is required for a reader to understand. It appears that assuming TSS always equals 10 mg/L would be a better fit than using the model. These figures shall be discussed, because without mention, they seem to suggest that the model does not work for individual locations.	Sediment Transport	Calibration and Validation	Moderate
48	Section 4.5, p. 36	The report states that the model uncertainty decreases with increasing spatial scale. The report shall include an explanation of the basis for this statement.	Sediment Transport	Calibration and Validation	Minor
49	Section 5.2.3, p. 41	The upstream loading concentrations were determined using average water column data from two upstream Total Maximum Daily Load (TMDL) stations and two downstream TMDL stations, all of which are outside the sediment transport model's "active" grid. The report does not include the TMDL data sets and corresponding data quality used to determine contaminant concentration boundary conditions presented in Table 5-1. The report shall include this information.	Chemical Fate	Boundary Condition	Moderate

50	Section 5.2.3, p. 41	Based on the map (Figure 5-4), the TMDL site 11200 does not appear to include any point sources above that area. The report shall include the rationale on why this site was expected to have higher sediment concentrations due to its distance from Lake Houston. Several points are being reduced for starting concentrations due to potential other sources, but this upper site should have more justification for this reduction.	Chemical Fate	Boundary Condition	Minor
51	Section 5.2.3, p.42	The sentence that begins "Therefore, the average .." mentions five inflow boundaries with the HSC. Those five inflow boundaries shall be labeled on a figure.	Chemical Fate	Boundary Condition	Minor
52	Section 5.2.5.2, p. 46	Initial model conditions for sediment concentrations of TCDD, TCDF and OCDD were adapted to the model domain from data collected for TMDL studies between 2002 and 2005. The initial grid values appear in Figure 5-7a through Figure 5-7c. The upstream initial model sediment concentration was determined by averaging five (5) values measured in the San Jacinto River. However, the time period and flow conditions of the sampling event(s) used are omitted in report. The report shall include this information.	Chemical Fate	Initial Conditions	Minor
53	Section 5.2.5.2, p. 47	Congener concentration data for deep sediment (> 6 inches) in the 2005 data set are sparse. Consequently, deep sediment initial concentrations were set equal to surface sediment concentrations. A summary narrative describes the results of a sensitivity analysis in which simulations using deep sediments with initial concentrations "two orders of magnitude" higher than surface sediment produced results "nearly identical" to those using initial concentrations equal to surface sediment concentrations. The sensitivity analysis was performed using problematic net sedimentation rates and Class 1 sediment characteristics, and the conclusion contains significant and un-quantified uncertainty. The report shall note this uncertainty.	Chemical Fate	Initial Conditions	Minor
54	Section 5.2.6, p. 48	The determination of site-specific contaminant partitioning in the water column is described using various data sets, numerous literature sources and methods of regression analysis. While the approaches used in the determinations of contaminant partitioning are generally acceptable, the procedure highlights the high range of variance inherent in the data sets and, in turn, the apparent low degree of correlation associated with the resulting regressions (e.g., Figure 5-9). The subject report provides no discussion of the magnitude of statistical uncertainty associated with the selected partitioning values. The report shall include this discussion.	Chemical Fate	Parameterization	Moderate
55	Section 5.2.6.2, p. 50	The particle-phase contaminant concentration is determined using the particulate dry mass density in the sediment bed (Equation 4, Appendix H). The dry density of Class 1 sediment is 0.83 g/cm3 (Sec 4.2.2), a fine-to-medium sand consisting mostly of silicate mineral grains with a sediment dry bulk density of 1.4 g/cm3 (Appendix C and Sec 5.2.8.1). Hence, particle-phase contaminant concentrations for total suspended solids in the water column are determined using the dry density of a sediment class (Class 1) for which much of the particles are too coarse and dense to be "suspended." Therefore, the mass of contaminant for total suspended solids (in water column) is over-estimated, and the contaminant mass in sediment is under-estimated. The report shall correct the density of Class 1 sediment to reflect the mix of grain size distributions used for the Class 1 sediment.	Chemical Fate	Parameterization	Minor

56	Section 5.2.6.2, p. 51	The report shall provide a reference for the equation that relates Kdoc to Kow.	Chemical Fate	Parameterization	Minor
57	Section 5.2.7.3, p. 56	Dissolved organic carbon concentrations in the water column vary through time (Figure 5-13). A constant value for dissolved organic carbon concentration is set in the model at an average value of 10 mg/L. However, the visual inspection of the plotted TCEQ TMDL data upon which the average value is attributed indicates the average dissolved organic carbon value is significantly less than 10 mg/L. The report shall explain this difference, or shall use a value consistent with the data.	Chemical Fate	Parameterization	Minor
58	Section 5.3.1, p. 62	The “factor of 1.5 to 3” shall be changed to “multiplicative factor of 0.33 to 0.67.”	Chemical Fate	Calibration and Validation	Minor
59	Section 5.3.2.1.1, p. 65	To show more conclusively that the model captures the lateral variation in the water column concentration reasonably well, as it states in the last sentence in the third bullet, the time series of predicted concentrations at the grid cells in which the TCEQ data and TMDL study data were collected shall be plotted, and the measured concentrations shall be plotted on these two plots for comparison, and the results shall be described in the text.	Chemical Fate	Calibration and Validation	Moderate
60	Section 5.3.2.1.2, p. 66	The temporal patterns in model predictions shall be shown averaged over only the EPA’s Preliminary Site Perimeter as well as averaged over only the cells within the perimeter of the northern impoundments. Data measured within these two areas shall also be shown on these time series plots.	Chemical Fate	Calibration and Validation	Minor
61	Section 5.3.2.1.3, p. 68, line 1	“Laterally and longitudinally averaged” shall be added before “Model predictions of”. Also, as seen in Figures 5-20a-b, the model over predicts the TCDD and TCDF particulate concentrations and under predicts the dissolved concentrations at the northern impoundments. The report shall discuss/comment on this as well as the implication of the under prediction of the dissolved concentrations on estimating the biota levels.	Chemical Fate	Calibration and Validation	Minor
62	Section 5.3.2.2, p. 69	The smaller decreases in the model averaged concentrations compared to the data-based SWACs seen in Figs. 5-21 most definitely need to be taken into consideration when the model is used during the Feasibility Study. The statement “are considered to be within the range of uncertainty in the SWAC-based analysis” shall be supported by providing the estimated uncertainty for this uncertainty. If the uncertainty was not calculated, on what basis was this statement made? It also states that the “SWACs are strongly affected by a few high concentration samples.” The five identified outlier data points shall not be included and the SWAC values be recalculated. Both the original and new SWAC analysis shall be included in the report.	Chemical Fate	Calibration and Validation	Moderate
63	Section 5.3.2.2, p. 69	Assessment of time trends of contaminants in surface sediment between 2005 and 2010 was performed on area-weighted concentrations from two (2) datasets through time. The assessment concludes that decreases of congener concentrations occurred during that period. However, the report does not include maps showing the sampling locations and Thiessen polygons for each event that was used in the assessment. Additionally, no information is provided with which to place the assessment into a context related to the historical flow regime prevalent prior to each sampling event. The report shall provide these maps and describe the flow regime prior to each event.	Chemical Fate	Calibration and Validation	Minor

64	Section 5.3.2.2, p. 70, 2nd paragraph, line 6	The statement “they are within a factor of 2” shall be changed to “they are within a factor of 2.5.”	Chemical Fate	Calibration and Validation	Minor
65	Section 5.3.3, p. 71	Contaminant model sensitivity analysis was done separately for four parameters rather than jointly for combinations of parameters as was done for the sediment transport model. While the model results showed little variation to individual parameters, combinations of parameters may produce greater variations. This issue shall be addressed in the report.	Chemical Fate	Sensitivity Analysis	Moderate
66	Section 5.3.3.2.1, p. 72	A sensitivity analysis was performed on the in-coming upstream sediment load concentration boundary condition at Mile 6. The concentration values were varied over a range of two standard errors (95%) for TCDF and OCDD. However, the mean about which the standard errors range is derived from previous TMDL studies. The flow conditions represented by the mean in-coming sediment load concentration are not provided. The variance of sediment concentration (2σ) that is used in the sensitivity analyses cannot be correlated to flow conditions. The report shall correlate the variance of respective sediment concentrations to the corresponding range of flow conditions (return events).	Chemical Fate	Sensitivity Analysis	Minor
67	Section 5.3.3.2.1, p. 73	Referring to Fig. 5-23a, the report shall comment on the comparison between the TMDL study data at the two stations upstream of river mile 10 and the range of model predictions from lower to higher upstream boundary conditions.	Chemical Fate	Sensitivity Analysis	Minor
68	Section 5.3.3.2.3, p. 75	While the range of site-specific partitioning coefficients inherent in the approaches used in their determination is not described, a sensitivity analysis was performed. In the sensitivity analyses, the partition coefficients were varied within a range of ±0.3 log units resulting in relatively insignificant effect on the modeling results. The sensitivity analyses were performed over a range of partition coefficients that significantly under-estimates the range of variance demonstrated in their determination. To provide a more meaningful gauge for the sensitivity analysis, the statistical variance associated with the coefficients’ determination shall first be defined, and then sensitivity analyses using a more appropriate coefficient range shall be performed.	Chemical Fate	Sensitivity Analysis	Minor
69	Section 5.3.3.2.4, p. 75	The report shall be revised to indicate that the model is more than “somewhat sensitive” to porewater dissolved organic carbon (DOC) since model predictions vary by up to a factor of 4 for TCDF.	Chemical Fate	Sensitivity Analysis	Minor
70	Section 6.1, p. 81	The statement “the fate model predicted a decline in surface sediment concentrations within the area surrounding the Site …, consistent with data-based evaluations” shall be modified to reflect the factor of 2.5 differences noted in a previous comment.	Chemical Fate	Sensitivity Analysis	Minor
71	Section 6.2, p. 81	The report states that the model will be used to “evaluate the impacts of the TCRA capping project on dioxin/furan transport.” The report shall describe the changes that will have to be made to the sediment transport model’s parameterization in order to evaluate the impacts of the TCRA capping project.	Chemical Fate	Future Simulations	Minor
72	Figures	A map shall be included, which displays gross erosion rates in the model domain, including all cells for which Egross=0.0, based on Equation G-26.	Sediment Transport	Calibration and Validation	Minor

73	Figures	The report does not include figures showing net erosion and net deposition within the model domain for specific return event simulations (e.g., 5-year, 10-year, 20-year, etc.). The report shall include figures with this information.	Sediment Transport	Calibration and Validation	Major
74	Figures	There are several figures that include an explanation about samples that have an average of greater than 50 percent non-detect explained with an open symbol, but there are not open symbols on the figures. This statement shall be removed, or the symbols added, from those figures.	Chemical Fate	Misc. Figure Updates	Minor
75	Figure 1-1	The study domain shall be delineated in this figure.	General	Misc. Figure Updates	Minor
76	Figure 1-2	Figure 1-2 (referenced on p. 3) is missing. Figure 1-2 shall be added to the report.	General	Misc. Figure Updates	Minor
77	Figures 3-2 and 3-3	The report shall show the location of Grennel Slough on the maps. Further, the shoreline legend box in Figure 3-2 is confusing. What feature in this figure is the white shoreline supposed to represent? The report shall clarify the legend box.	General	Misc. Figure Updates	Minor
78	Figures 3-14, 3-15, and 3-16	For figures 3-15 and 3-16, the y-axis scale is larger than in Figure 3-14 and it makes the comparison more difficult to see. It appears the amplitude of the velocity and water surface elevations are muted in the simulation compared to the measured data. Perhaps Z0 is too high? The report shall include a discussion of the potential outcome and interpretation of muted simulations compared to measured data (Section 3.4, p. 21), which may be useful if decreasing Z0 or additional calibration causes other unintended problems.	Hydro	Calibration and Validation	Moderate
79	Figure 4.1 and C-2	This figure shall use a different color for non-cohesive locations because the brown is hard to see on the figure. Also, symbols used to show locations are very large making it hard to see other features on the map, and shall be revised. Figure C-2 and 4-1 appear to have inconsistencies as well. See the upper reach of the San Jacinto River where locations for sampling on one figure are not on the other. The report shall explain why there are differences in sampling locations in these figures.	Sediment Transport	Calibration and Validation	Minor
80	Figure 5-4	In the legend box for Figure 5-4, the red triangle is labeled as “Upstream Inflow Boundary”. However, the two red triangle locations are not at the model’s upstream boundary. The labeling in the legend box shall be corrected.	Chemical Fate	Misc. Figure Updates	Minor
81	Figures 5.19 a-c	The San Jacinto River flow shall be changed to a log scale, so that the discharge is shown in the same scale as the predicted dioxins/furans.	Chemical Fate	Misc. Figure Updates	Minor
82	Figures 5.21a to 5.21c	The report did not discuss the potential skewness of the datasets used in Figure 5.21a through Figure 5.21c. Similar conclusions could be reached if more Thiessen polygons had lower average concentrations in 2010 due to location – and not actual decrease in sediment concentration. The report shall evaluate the potential skewness of the datasets and its effects on sediment concentrations. The report shall also define the numbers and symbols that are located on the top line of these figures.	Chemical Fate	Calibration and Validation	Minor
83	Appendix A	With regard to Figure A-3, upstream bathymetric interpolation cuts the main channel twice near Grennel Slough (see figure below). This may affect upstream flow conditions and as such shall be investigated.	Hydro	Bathymetry and Geometry	Moderate

84	Appendix A, p. 2	The bathymetric survey did not cover the area within EPA's Preliminary Site Perimeter (see Figure A-1). This appears to be a significant gap in the bathymetry data needed for the model. Explain why data within this area was not obtained and describe the data used to set the depths of model cells in this area.	Hydro	Bathymetry and Geometry	Minor
85	Appendix B, p. 2	The ADCP measurements were conducted May 10 through November 15, 2011. However, Figures B-1 through B-3 show data for May and June only. The remaining velocity data shall be plotted and included in the report.	Hydro	Calibration and Validation	Moderate
86	Appendix B, p. 2	The ADCP data were not obtained at high flows because such flows did not occur in 2011. The report shall consider conducting ADCP measurements during high flow events if such flows occur in the near future?	Hydro	Calibration and Validation	Major
87	Appendix C, p. 2	The numbers of bed probing in Appendix C do not match with the numbers in the main body of the report (68 verses 98). The report shall clarify this discrepancy.	Sediment Transport		Minor
88	Appendix D, p. 2	The report shall provide the location of the precipitation gage for station 710.	Hydro		Minor
89	Appendix D, Figure D-1	The figure shall use a different color than black for the site locations on map.	Sediment Transport	Misc. Figure Updates	Minor
90	Appendix D, Figure D-2	This figure, which is a TSS concentration plot, defines the cross-sectional data point as EDI (equal discharge increments). EWI (equal width increments) is listed on page 2. The report shall clarify if EDI or EWI was used for the data collection at the cross section.	Sediment Transport	Misc. Text Updates	Minor
91	Appendix E	A single value for the three erosion rate parameters was obtained for each of the five depth intervals from each core. A "log-average" (geometric mean) value was determined for the proportionality constant, A (Equation E-1), at each depth interval (Table E-6). As is normal, the geometric mean results in values of A for the Sedflume data sets (Table E-1 through Table E-5) are significantly lower than the arithmetic mean for the same data sets. Use of the lower values of A results in significantly lower values of the average gross erosion rates for each depth interval (Equation E-2). No rationale is provided to justify use of the geometric mean for the proportionality constant, and the report shall provide this rational.	Sediment Transport	Sedflume Data Analysis	Moderate
92	Appendix E	The results of the Sedflume experiments were used to develop average critical shear stress (τcr) values for each sediment layer (e.g., Table E-1 through Table E-5). However, the average critical shear stress (τcr) values (Table E-6) were determined using the arithmetic mean, not the geometric mean (as for the proportionality constant), which results in the significantly higher value of the two means. The use of the higher arithmetic average value, rather than the lower geometric average value for the critical shear stress (τcr) results in a lower gross erosion rate (Egross; e.g., Equation E-2). Together with the geometric average of the proportionality constant, the use of the arithmetic average of critical shear stress reinforces a biased tendency towards lower erosion in the model domain. The report shall provide a rational for the use of the arithmetic mean.	Sediment Transport	Sedflume Data Analysis	Moderate

93	Appendix F	Of the ten (10) cores used in the 137Cs isotopic study, data from only one core (SJR1005) were usable (e.g., Table F-3). Evaluation of the data from Core SJR1005 indicates there were only two detections (Figure F-6). The two data points from Core SJR1005 were used to assign a date to the corresponding sediment depth from which a net sedimentation range was determined (e.g., Table F-3). However, the report does not provide which of the four (4) typical interpolation methods (e.g., USGS, 2004) were used. The report shall include this information. In addition, include the r2 values for the regression lines of the slopes for the upper and lower bounds.	Sediment Transport	Geochronology Analysis	Moderate
94	Appendix F and Appendix H	The 137Cs and 210Pb activity analytical results were reported with significant experimental error (e.g., Figure F-2 through Figure F-11, Subject Report). Linear regression was performed to find the slope of the line defined by those 210Pb data that were judged to be unsupported (Append F, Subject Report) versus their core depth to determine net sedimentation rates (Figure F-12 through Figure F-26, Subject Report). However, the regressions do not incorporate the variance of experimental error associated with each datum. Therefore, a range of slopes and, consequently, net sedimentation rates, exists at each core location. Only "mean" net sedimentation rates are reported, but not the significant deviation inherent in the analyses. Use of 137Cs isotopic data from a sediment core for determining net sedimentation rates and/or age dating is predicated upon corroborating data obtained from other cores in the same depositional system (e.g., USGS, 2004). However, in this instance, there are no such corroborating data. Therefore, the single 137Cs net sedimentation rate reliability or applicability to the model domain cannot be determined. An evaluation of the net sedimentation rates in the model domain was also performed using the 210Pb isotopic system. Contrary to the more suitable applicability of the 137Cs isotopic system to a	Sediment Transport	Geochronology Analysis	Moderate - Major
95	Appendix F, p. 5	The report shall explain how the "effects of uncertainty due to selection of data to use in the log-linear regression were also accounted for in the analysis."	Sediment Transport	Misc. Text Updates	Minor
96	Appendix I, Figure I-1	The flow shall be changed to log scale so it can be compared to WSE plot. Also, the shaded areas around the WSE plot line shall be defined. It is unclear what this shaded area is trying to represent.	Hydro	Misc. Figure Updates	Minor
97	Appendix I, Figure I-22-7	The report shall provide information regarding where these data originated and additional text to describe the figure. The figure shows some dates, but it is not clear if the data between dates were daily values or interpolated – the report shall clarify this. The y-axis shall also be changed to a log scale	Hydro, Sedtran	Misc. Text Updates	Minor

Count of EPA Comment #	Column Labels					
Row Labels	Minor	Minor - Moderate	Moderate	Moderate - Major	Major	Grand Total
General	5					5
Hydro	11		11	2	2	26
Hydro, Sedtran	1					1
Sediment Transport	19	3	11	3	2	38
Chemical Fate	22		5			27
Grand Total	**58**	**3**	**27**	**5**	**4**	**97**